Appl. No.: 10/709,868
Amdt. Dated: 10/4/2007
Reply to Office action of: 04/05/2007

AMENDMENTS TO THE DRAWINGS:

No amendments to the drawings are being presented herewith.

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REMARKS/ARGUMENTS

Claims 1 – 16 remain in this application. Claims 4 – 8 and 12 – 16 have been amended to remove the phrase "the base fuel".

No new matter has been introduced by these amendments to the specification, and claims.

Claims 4 – 8 and 12 – 16 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner states:

> The claims recite the limitation "the base fuel". There is insufficient antecedent basis for this limitation in the claims.

Applicant respectfully traverses this rejection. By this amendment the phrase "the base fuel" has been removed and the claim now clearly claims use in "the biodiesel fuel". In view of this amendment to claims 4 – 8 and 12 – 16 this rejection is now moot and Applicant asks that it be removed.

Claims 1 – 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson ('723) in view of Demirbas (Current Advances in Alternative Motor Fuels). Specifically, the Examiner states:

> Nelson discloses a motor fuel additive composition comprising (a) a fuel conditioner component and (b) a detergent component. The fuel conditioner (a) comprises (i) from 2 to 50 percent by weight of a polar oxygenated hydrocarbon compound and (ii) from about 2 to about 50 percent by weight of an oxygenated compatibilizing agent. The detergent component (b) is selected from the group consisting of (i) a reaction product of a substituted hydrocarbon (A) and an amino compound (B), and (ii) a polybutylamine or polyisobutylamine (see abstract). The polar oxygenated hydrocarbon has an average molecular weight of from about 200 to about 500, and acid number of about 25 to 175, and a saponification number of about 75 to about 200 (col. 7, lines 11 – 33). The oxygenated compatibilizing agent has a solubility parameter of from about 7.0 to about 14.0 and moderate to strong hydrogen-bonding capacity (col. 7, lines 53 – 62). The hydrocarbon compound (A) of the detergent component is a substituted

hydrocarbon of the formula R_1—X wherein R_1 is a hydrocarbyl radical having a molecular weight in the range of about 150 to 10,000 and X is selected from the group consisting of halogens, succinic anhydride and succinic dibasic acid (col. 4, lines 52 – 65). The amino compound (B) is of the formula H—(NH—(A)m)n—Y—R_2 wherein Y, A, m, n, and R_2 are identical to those in the instant claim 8 (col. 5, lines 1 – 21). The polybutylamine or polyisobutylamine is identical to that in instant claim 8 (col. 6, lines 30 – 46). Further, the composition includes other additives such as methyl tertiary butyl ether (MTBE) and ethyl tertiary butyl ether (ETBE), alcohols such as methanol or ethanol, and additives that are "typically employed in motor fuels" such as a common anti-knock additive, tetraethyl lead (col. 9, lines 56 -0- 60). Nelson also discloses examples wherein the additive composition was added to a base fuel in amounts between 40 ppm and 1000 ppm (col. 10, lines 44 – 50; col. 11, lines 14 – 20).

Nelson does not disclose: (i) the composition as specifically a biodiesel fuel additive composition, and (ii) the addition of the composition as simultaneously, before, or after addition of the other additives, and (iii) an amount of from about 2% to about 100%, and up to 50% by volume of additive composition in biodiesel.

With respect to (i) above, it is the examiner's position that biodiesel is a type of motor fuel, so that the disclosed motor fuel additive composition of Nelson would generically read on a biodiesel fuel additive composition. Attention is drawn to Demirbas, which discloses alternative motor fuels, in which biodiesel is listed as one (see abstract).

Therefore, while Nelson is silent with respect to specifically biodiesel fuel, the generic usage of motor fuel encompasses biodiesel, and it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to utilize the composition of Nelson in a biodiesel fuel as disclosed by Demirbas.

With respect to (ii) above, regarding claims 6 – 8 and 12 – 14, although Nelson and Demirbas do not disclose addition of additive to a base fuel simultaneously, after or before any other additives, it is noted "[E]ven though product-by-process claims are limited by and defined by

> the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process", *In re Thorpe*, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). See MPEP 2113.
>
> Therefore, absent evidence of criticality regarding the presently claimed addition of additive to a base fuel simultaneously, after or before any other additives and given that Nelson and Demirbas meet the requirements of the claimed composition, Nelson and Demirbas clearly meet the requirements of present claims 6 – 8 and 12 – 14.
>
> With respect to (iii) above, regarding claims 2 – 3 and 10 – 11, it is the examiner's position that the amount of additive composition is a result effective variable because changing it will clearly affect the type of product obtained. See MPEP § 2144.05(B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).
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> In view of this, it would have been obvious to one of ordinary skill in the art to utilize amounts of additive composition including those within the scope of the present claims, so as to produce desired end results. Because of the effects of the detergent and conditioner components of the additive, the amount utilized in Nelson and Demirbas would be chosen accordingly in order to produce the desired biodiesel fuel with such properties.

Applicant respectfully traverses these rejections. The key to Applicant's invention is the discovery of the claimed biodiesel fuel additive that accelerates the combustion phenomenon and reduces ignition delay in diesel engines thereby reducing or eliminating a major problem of biodiesel fuel impurities commonly found in such biodiesel fuel as well as the claimed fuel additive synergistically interacting to reduce particulate emissions and increase Cetane number. This is especially true for biodiesel formulations

containing recycled vegetable oils. Furthermore, in light of the fact that biodiesel fuel tends to have impurities form during storage through oxidation as well as being formed by insoluble materials resulting from biodiesel fuel production and recycled oils, the fact that a class of additive compound will provide benefit to a gasoline composition does not suggest that it will also provide the unexpected synergistic benefits in biodiesel fuel. Additionally, the time of adding a highly oxygenated polar compound to a material that is detrimentally affected by oxidation is also not obvious or suggested by the art.

A fair reading of the Nelson ('723) reference discloses an additive package for motor fuel having any anti-knock materials previously blended into the base motor fuel before the addition of the additive package of Nelson ('723). Because of the unpredictable nature of organic compositions that are easily oxidized or otherwise prone to producing unwanted impurities through reaction with additives, a situation well known in the diesel fuel art, it is not obvious to be able to utilize a compound similar to one suitable for gasoline in a diesel fuel. Furthermore, the Nelson ('723) provides no teaching of a reduction of particulate emissions, which is not a major consideration in gasoline fuels. Furthermore, biodiesel fuels have a whole unique set of complex chemistry interactions due to the recycled components used to produce the fuels.

Clearly, when viewed in this light the Nelson ('723) reference does not disclose, teach, or suggest the use of a biodiesel fuel additive that accelerates the combustion phenomenon and reduces ignition delay in diesel engines thereby reducing or eliminating a major problem of biodiesel fuel impurities commonly found in such biodiesel fuel as well as the claimed fuel additive synergistically interacting to reduce particulate emissions and increase Cetane number.

A fair reading of the Demirbas (Current Advances in Alternative Motor Fuels – abstract) reference discloses simply that there exist alternative fuels which are as diverse as biodiesel, hydrogen, electricity, and solar. This reference also teaches that these diverse fuels can be considered competitors to petroleum for use in vehicle engines. This reference does not teach any particulars about any one of these alternative fuels and in fact is simply an overview of numerous alternative fuel options, some of which have found some use and others which have not left the drawing board so to speak. Thus, this reference clearly does not disclose, teach, or fairly suggest that biodiesel is "motor fuel" as described by the Nelson ('723) reference, but instead teaches that it is an emerging

technology in direct competition with traditional petroleum fuels. Clearly, when viewed in this light this reference does not disclose, teach or fairly suggest to one skilled in the art how to produce a biodiesel fuel additive that accelerates the combustion phenomenon and reduces ignition delay in diesel engines thereby reducing or eliminating a major problem of biodiesel fuel impurities commonly found in such diesel fuel as well as the claimed fuel additive synergistically interacting to reduce particulate emissions and increase Cetane number

Clearly, when viewed in this light no combination of the Nelson ('723) and Demirbas (Current Advances in Alternative Motor Fuels – abstract) references disclose, teach, or fairly suggest Applicant's claimed invention.

The Examiner's position that complex organic compounds and chemistry may be added and subtracted in known fashion to produce any desired product and that the process is unimportant to the resultant product is clearly an over simplification of a very complex fuel formulation art. In the motor fuel additive arts the complexities of the chemistry is such that amounts of particular compounds and there time and order of addition are critical to making a successful fuel. Clearly, taking the position of the Examiner to overcome the lack of prior art is not what the case law says the standard of patentability of complex organic compositions is. Applicants' respectfully but strenuously traverse the Examiner's position.

Applicant notes the references cited by the Examiner but not used as a basis of rejection. In view of these references not being a basis of rejection, Applicant makes no further comment about them.

In view of the remarks herein, and the amendments hereto, it is submitted that this application is in condition for allowance, and such action and issuance of a timely Notice of Allowance is respectfully solicited.

Respectfully submitted,

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Attachments